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REINFORCER ASSESSMENT FOR CHILDREN WITH DEVELOPMENTAL DISABILITIES AND VISUAL IMPAIRMENTS

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We assessed the applicability of two previously developed reinforcer assessment procedures to children with developmental disabilities and visual impairments. Greater differentiation between stimuli was observed with a choice procedure than with a preference procedure. Measurement of compliance and rate of responding in adaptive skill training confirmed that the choice procedure accurately identified reinforcing stimuli. The preference procedure produced false positive predictions of reinforcer efficacy.

DESCRIPTORS: stimulus preference, visually impaired, developmental disabilities

Effective behavioral programming for individuals with developmental disabilities requires the accurate selection of stimuli that will serve as reinforcers (Lutzker, McGimsey-McRae, & McGimsey, 1983). One problem, however, is that it may be difficult to identify idiosyncratic reinforcing events for a given individual. Reinforcer assessments may identify specific and idiosyncratic stimuli to use in behavioral acquisition programs. Pace, Ivancic, Edwards, Iwata, and Page (1985) developed a stimulus preference assessment that measures participant approach behavior to individually presented stimuli. Subsequently, students showed greater differentiation between preferred and nonpreferred stimuli when items were presented in a forced-choice format rather than individually (Fisher et al., 1992). The procedures described by Pace et al. and Fisher et al. rely principally on visual examination of the items prior to selection. Therefore, the applicability of these reinforcer assessment procedures to individuals with visual impairments is unknown. That is, a specific reinforcer assessment method for the visually impaired population has not been established.

The present study sought to replicate and extend the results of Fisher et al. (1992) and Pace et al. (1985) by modifying the stimulus choice and preference procedures for use with children with developmental disabilities and visual impairments. A second goal was to assess the reinforcing properties of frequently selected stimuli from both assessments when applied to skill acquisition tasks.

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METHOD

Students

Four male students (ages 8 to 13 years) enrolled in a school for visually impaired students participated. Students were diagnosed with severe mental retardation and retinopathy of prematurity, optic atrophy, or optic nerve hypoplasia. Three students participated in each phase of the study.

Phase 1

Luke, Mark, and Sean participated in Phase 1, in which the stimulus preference (Pace et al., 1985) and forced-choice (Fisher et al., 1992) procedures were compared using identical stimulus items. The primary distinction between these two procedures was the number of items available for selection during each trial. In the stimulus preference procedure (henceforth referred to as the preference procedure), one item was presented to the student and approach/no-approach behavior was scored. In the forced-choice procedure (henceforth referred to as the

choice procedure), two items were presented and the student was allowed to approach one or none. Approach behavior was defined as reaching for the stimulus. No approach was scored if movement towards the stimulus or stimuli was not observed.

For both assessments, six items were selected based on teacher suggestion, low cost, and representation of different reinforcement classes (edible, social, tactile, and auditory). These classes were typical of those used in prior reinforcer assessment studies (Fisher et al., 1992; Pace et al., 1985; Vollmer & Iwata, 1991).

The traditional preference procedure was modified by using physical guidance to prompt the student to explore the item. The experimenter physically guided the student to touch the item for 3 s and then to put his hand in his lap. The experimenter then scored approach/no-approach behavior. If approach behavior was observed, the student received either 5 s of access to the stimulus, one cracker or candy, or one sip of juice (depending on the item selected). If the student did not approach either stimulus, the experimenter physically guided him to touch the item for 5 s and then to put his hand in his lap. The experimenter then repeated the trial. If no approach occurred, the experimenter provided no consequences and began the next trial.

In the choice procedure, the experimenter presented two items to the subject for each trial. The experimenter guided the student to touch the left item first and then the right item for 3 s each. The experimenter then guided the student to put his hand in his lap and scored approach/no-approach behavior. Consequences were identical to the preference procedure, with the exception that guidance to touch the left and then the right stimulus for 5 s was provided if no approach was initially observed.

For both procedures, each stimulus item was presented 10 times in random order. In the choice procedure, the item location was counterbalanced to control for position preference. The order of preference and choice assessments was randomly determined for each student.

Phase 2

Greg, Mark, and Sean participated in Phase 2. Luke did not participate because of a prolonged illness. Greg was selected for participation because he had participated in a forced-choice reinforcer assessment prior to Phase 2. In Phase 2, results from the Phase 1 assessment were applied to a skill acquisition task for each student. A combination multiple baseline reversal design was used to compare baseline performance, performance with a high-preference stimulus as a consequence, and performance with a high-choice stimulus as a consequence. A high-preference/low-choice stimulus was identified as a stimulus approached on at least 80% of trials in the preference assessment and on 60% or fewer trials in the choice assessment (Fisher et al., 1992). A high-choice/low-preference stimulus could not be defined because every stimulus in the preference assessment was approached on 80% or more trials for each student. Therefore, a high-choice stimulus was identified as the most approached stimulus for each student's choice assessment.

A target behavior that was inconsistently performed according to teacher report was selected from the student's current educational program. For Greg, the behavior was a general response class of following a one-step instruction (we used "Stand up, please" as a representative instruction); for Mark and Sean, fine motor tasks were selected (stacking blocks and inserting a peg into a pegboard, respectively).

For each skill, the experimenter first gave a practice trial by verbally prompting and physically guiding the student to complete the task. The experimenter then immediately presented the consequence (high-choice stimulus, high-preference stimulus, or no consequence in baseline). A 5-min session then began that consisted of a verbal prompt presented every 30 s. Compliance was scored if the student completed the task according to a prespecified criterion (e.g.,

peg contacts hole in which it is to be placed) within 10 s of the verbal prompt. For the remaining 20 s, any additional behaviors that met the response criterion were scored as independent responses (for use in the calculation of rate of response for Mark and Sean only). Each response that met criterion was followed by the appropriate consequence (high-preference stimulus, high-choice stimulus, or no consequence in baseline). No consequences were provided for noncompliance in any phase.

Performance was measured by both percentage compliance (all 3 participants) and rate of correct responses (Mark and Sean). Both measures were selected for Mark and Sean to determine the impact of consequences on free and prompted responding. Compliance was assessed by calculating the percentage of opportunities in which the task was completed within 10 s of the prompt. Rate was calculated by totaling the responses completed during the session (either independently or within 10 s of the verbal prompt) and dividing by 5 min. Although rate largely was influenced by the experimenter's prompts, the measure captures both compliance and independent occurrences of behavior.

For the preference and choice assessments, interobserver agreement was determined by the percentage of trials for which there was agreement on approach/no-approach behavior. Interobserver agreement for compliance was obtained by calculating the percentage of 10-s intervals in which compliance or noncompliance was scored by both observers. For rate, interobserver agreement was obtained by calculating the agreement between observers on total responses (compliance or independent) that occurred during each 30-s interval. Interobserver agreement for Phase 1 was assessed for 33.3% of all forced-choice assessments (M = 97%) and 67.7% of preference assessments (100%). Interobserver agreement for Phase 2 was assessed for 87.5% of baseline sessions (M = 98.6% for compliance and 100% for rate), 48% of high-choice sessions (M = 98% and 98%), and 100% of high-preference sessions (M = 95.7% and 92.9%).

RESULTS

Figure 1 illustrates the results of Phase 1 for each student. In Phase 1, the choice procedure resulted in greater differentiation of stimuli than the preference procedure for each of the 3 students. A single stimulus was selected on 100% of opportunities for each student (vibration for Luke; music for Mark and Sean). The remaining items were selected on 0% to 70% of the intervals; however, in the preference assessment, each student selected every item on 70% to 100% of the intervals. Consequently, a high-choice and a high-preference/low-choice item were available for each student.

High-choice and high-preference/low-choice items were used in Phase 2 to assess percentage compliance and rate of responding in baseline (no consequence), high-choice, and high-preference/low-choice conditions. Figure 2 shows compliance only, because relative rates and relative level of compliance corresponded for Mark and Sean (and was not measured for Greg). Greg demonstrated low compliance in baseline (M = 18%). In the high-choice condition, compliance increased (M = 48%). The high-preference/low-choice condition was not assessed for Greg because he transferred to another school during the study. Mark's responding increased from a mean of 6% compliance and 0.1 responses per minute during baseline to a mean of 56% and 2.9 responses per minute during the high-choice condition. In the subsequent high-preference/low-choice condition, compliance and rate declined (M = 40% and 1.1). A return to the high-choice condition resulted in increased responding (M = 93.3% and 5.2). Sean likewise displayed low baseline responding (M = 26% and 1.1). In the high-preference/low-choice condition, compliance and rate remained low (M = 20% and .9), and in the high-choice condition, compliance and rate increased (M = 42% and 1.8).

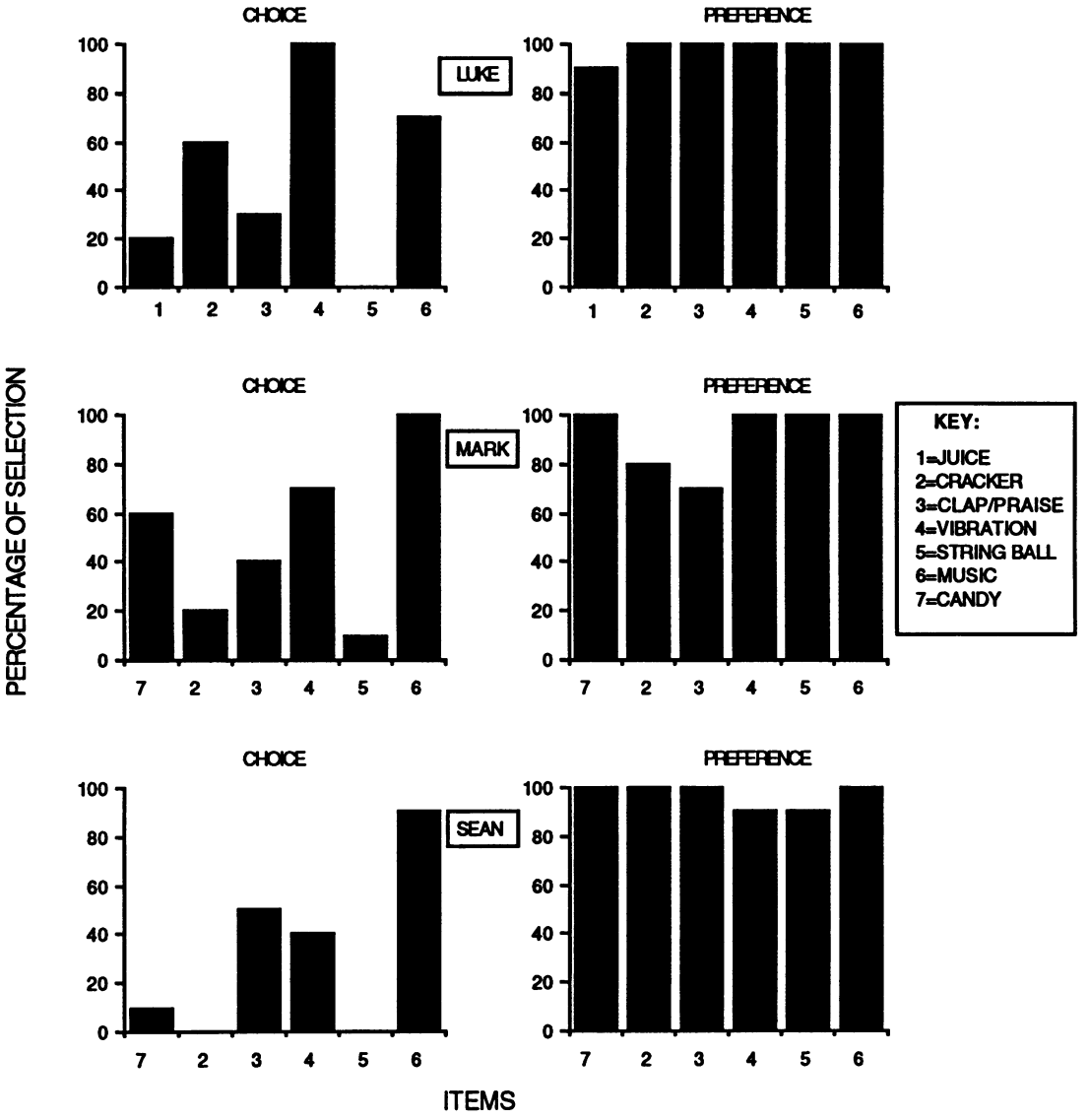

Figure 1. Percentage of selection during choice and preference assessments for Luke, Mark, and Sean.

DISCUSSION

The choice procedure produced significant differentiation among stimuli for all students. Whereas the preference procedure identified reinforcers with sighted participants in past research (Pace et al., 1985), the procedure may not be as effective with visually impaired participants because of their reliance on tactile investigation of novel stimuli. That is, when presented with a stimulus, an individual with visual impairment may approach the item not because it is preferred, but because reaching for and tactilely exploring the item is the way to respond to stimuli in general. Even though the students in our study were allowed to explore items prior to the assessment of approach, they apparently were disposed to manipulate all items further. In the choice procedure, however, preference may be indicated because items were placed in direct competition: One would be approached

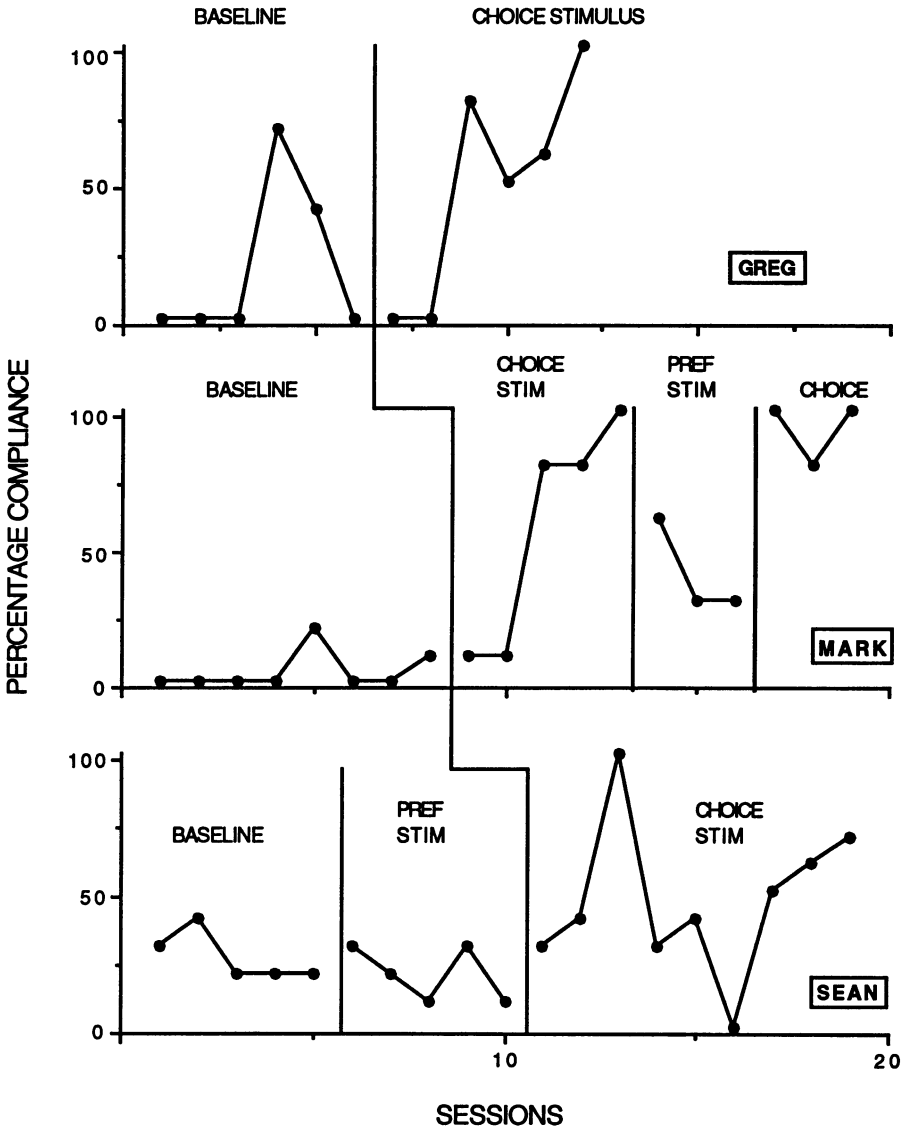

Figure 2. Percentage compliance during baseline, high-choice stimulus reinforcement, and high-preference/low-choice stimulus reinforcement for Greg, Mark, and Sean.

prior to the other immediately after the pretest exploring response.

Use of frequently selected items as reinforcers for skill acquisition tasks confirmed that the choice procedure identified reinforcing stimuli for all 3 students in Phase 2, but the preference procedure identified stimuli that resulted in more ambiguous responding (i.e., some predictions of the preference assessment resulted in false positives). Anecdotal observation of 1 student in the classroom revealed that when given the rubber string ball (a high-preference stimulus) by the teacher, he reached for the item but proceeded to throw it on the ground. Although Fisher et al. (1992) noted that the preference procedure still may be superior for low-functioning individuals who may not make reliable choices, the choice procedure may be the most reliable method for the visually impaired population regardless of their functioning level.

REFERENCES

Fisher, W., Piazza, C. C., Bowman, L. G., Hagopian, L. P., Owens, J. C., & Slevin, I. (1992). A comparison of two approaches for identifying reinforcers for persons with severe and profound disabilities. *Journal of Applied Behavior Analysis, 25,* 491–498.

Lutzker, J. R., McGimsey-McRae, S., & McGimsey, J. F. (1983). General description of behavioral approaches. In M. Hersen, V. B. Van Hasselt, & J. L. Matson (Eds.), *Behavior therapy for the developmentally and physically disabled* (pp. 25–56). New York: Academic Press.

Pace, G. M., Ivancic, M. T., Edwards, G. L., Iwata, B. A., & Page, T. J. (1985). Assessment of stimulus preference and reinforcer value with profoundly retarded individuals. *Journal of Applied Behavior Analysis, 18,* 249–255.

Vollmer, T. R., & Iwata, B. A. (1991). Establishing operations and reinforcement effects. *Journal of Applied Behavior Analysis, 24,* 279–291.

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